Kentucky

Status Report on NASA Grant NsG-393/18-01-001 for the period from December 1, 1964 to May 31, 1965.

During the period December 1, 1964 to May 31, 1965, computations were continued on the wave-function of the negative hydrogen ion. Mr. James E. Miller, graduate assistant, was chiefly responsible for overseeing the progress of the iterative calculations at the University of Kentucky Computing Center. Under the direction of Dr. W. S. Krogdahl, principal investigator, he and Mrs. Regina Caveny of the Computing Center also developed the necessary programs for the calculation of the continuous absorption coefficient of the negative hydrogen ion, using the plane-wave approximation for the free-state. An additional program was prepared and tested for calculating the sum-rule tests of the absorption coefficient. Preliminary results were assembled in preparation for reporting on at the summer meeting of the American Astronomical Society and for publication as soon thereafter as possible.

In addition to the foregoing, preliminary tests were made of a method due to Lanczos (described in his book "Applied Analysis") for finding all eigenvalues and all eigenfunctions of a matrix of very large order. This method is being explored as a valuable supplementary method to the one which we have developed and applied heretofore.

Both lines of investigation are being continued.

W. S. Krogdahl